That which is claimed is:

1. A process for purification of olefins which comprises:

providing a fluid mixture predominantly comprising at least one olefin of from 2 to about 8 carbon atoms, impurities comprising propadiene and optionally hydrocarbon compounds of from 3 to about 6 carbon atoms having more than one double bond and/or acetylenic impurities having the same or similar carbon content in an amount of up to about 1 percent by volume base upon the total amount of olefin present and optionally saturated hydrocarbon gases;

passing the fluid mixture through a particulate bed of adsorbent comprising predominantly a support material having high surface area on which is dispersed at least one metallic element in the zero valent state selected from the group consisting of chromium, iron, cobalt, nickel, copper, ruthenium, palladium, silver and platinum, to effect, under conditions suitable for adsorption within the bed, to effect, in the presence of an essentially dihydrogen-free atmosphere within the bed, selective adsorption and/or complexing of the contained impurities with the adsorbent, and thereby obtain purified effluent which contains less than about 1 part per million by volume of the propadiene impurity; and

thereafter regenerating the resulting bed of adsorbent in the presence of a reducing gas comprising dihydrogen to effect release of the contained impurities from the adsorbent.

2. The process according to claim 1 wherein the adsorbent further comprises at least one element selected from the group consisting of lithium, sodium, potassium, zinc, molybdenum, tin, tungsten, and iridium, dispersed on the support material.

3. The process according to claim 1 wherein the support is a material selected from the group consisting of alumina, silica, active carbon, clay and zeolites, and has surface area in a range of from about 10 to about 2,000 square meters per gram as measured by the BET gas adsorption method.

4. The process according to claim 3 wherein the metal dispersed on the support material is at least one element selected from the group consisting of iron, cobalt, nickel, copper, palladium, silver and platinum, and the absorbent has a dispersed metal content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

5. The process according to claim 4 wherein the fluid mixture passes though the bed of particulate adsorbent at gas hourly space velocities in a range of from about 0.05 hours^{-1} to about 20,000 hours^{-1} measured at standard conditions of 0°C and 760 mm Hg.

6. The process according to claim 1 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 80 to about 500 square meters per gram as measured by the BET gas adsorption method.

7. The process according to claim 6 wherein the metal dispersed on the support material is palladium, and the absorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

8. The process according to claim 1 wherein the olefin in the fluid mixture being purified is predominantly ethylene or propylene, the fluid mixture contains less than about 0.5 parts per million by volume of hydrogen and less than about 1 parts per million by volume of mercury-containing, arsenic-containing, and sulfur-containing components, each calculated as the element, and wherein the gaseous mixture, while passing through the bed, is at temperatures in a range of from about negative 5°C to about 65°C.

9. The process according to claim 8 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 150 to about 350 square meters per gram as measured by the BET gas adsorption method, and wherein the metal dispersed on the

support material is palladium, and the absorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

10. The process according to claim 1 wherein the adsorbent has a metal dispersion value of at least 10 percent as measured by carbon monoxide chemisorption method.

11. A process for purification of olefins produced by thermal cracking of hydrocarbons which comprises:

passing a fluid mixture comprising at least about 99 percent by volume of an olefin having from 2 to about 4 carbon atoms, and impurities comprising propadiene and optionally hydrocarbon compounds of from 3 to about 6 carbon atoms having more than one double bond and/or acetylenic impurities having the same or similar carbon content in an amount in a range upward from about 1 to about 5000 parts per million by volume, through a particulate bed of adsorbent comprising predominantly a support material selected from the group alumina, silica, active carbon, clay and zeolites having surface area in a range of from about 10 to about 2,000 square meters per gram as measured by the BET gas adsorption method, on which is dispersed at least one metallic element selected from the group consisting of chromium, iron, cobalt, nickel, copper, ruthenium, palladium, silver and platinum, to provide an effluent stream from the bed;

effecting, in the presence of and essentially dihydrogen-free atmosphere within the bed, selective and reversible adsorption and/or complexing of the contained diene and acetylenic impurities with the adsorbent, until levels of the diene impurities in the effluent stream increase to a predetermined level in a range downward from about 1 parts per million by volume; and

thereafter regenerating the resulting bed of adsorbent in the presence of a reducing gas comprising dihydrogen to effect release of the contained diene impurities from the adsorbent.

12. The process according to claim 11 wherein the adsorbent further comprises at least one element selected from the group consisting of lithium, sodium, potassium, zinc, molybdenum, tin, tungsten, and iridium, dispersed on the support material.

13. The process according to claim 11 wherein the support is a material selected from the group consisting of alumina, silica, carbon clay and zeolites, and has surface area in a range of from about 10 to about 2,000 square meters per gram as measured by the BET gas adsorption method.

14. The process according to claim 13 wherein the metal dispersed on the support material is at least one element selected from the group consisting of iron, cobalt, nickel, copper, palladium, silver and platinum,, and the absorbent has a dispersed metal content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

15. The process according to claim 14 wherein the fluid mixture passes though the bed of particulate adsorbent at space velocities in a range of from about 0.05 hours^{-1} to about 20,000 hours^{-1} measured at standard conditions of 0°C and 760 mm Hg

16. The process according to claim 11 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 80 to about 500 square meters per gram as measured by the BET gas adsorption method, and contains less than 500 parts per million by weight of a sulfur-containing component, calculated as elemental sulfur.

17. The process according to claim 16 wherein the metal dispersed on the support material is palladium, and the absorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent.

18. The process according to claim 11 wherein the olefin in the fluid mixture being purified is predominantly ethylene or

propylene, the fluid mixture contains less than about 0.5 parts per million by volume of hydrogen and less than about 1 parts per million by volume of mercury-containing, arsenic-containing, and sulfur-containing components, each calculated as the element, and wherein the gaseous mixture, while passing through the bed, is at temperatures in a range of from about negative 35°C to about 65°C.

19. A process for purification of an olefinic stream to obtain a diene-free feedstock suitable for formation of a polymeric resin, which purification process comprises:

providing an impure gaseous stream comprising at least about 99 percent by volume of an olefin selected from the group consisting of ethylene and propylene, impurities comprising propadiene and optionally hydrocarbon compounds of from 3 to about 5 carbon atoms having more than one double bond and/or acetylenic impurities having the same or similar carbon content in an amount in a range upward from about 1 to about 3500 parts per million by volume based upon the total amount of olefin present and optionally saturated hydrocarbon gases;

passing the impure stream through a bed of adsorbent which is free of a substantial amount of carbon monoxide, the adsorbent comprising at least about 90 weight percent of gamma alumina having surface area in a range of from about 150 to about 350 square meters per gram as measured by the BET gas adsorption method, on which is dispersed at least one element selected from the group consisting of iron, cobalt, nickel, copper, palladium, silver and platinum, in the zero valent state, to effect, under conditions suitable for adsorption within the bed, selective adsorption and/or complexing of the contained impurities with the adsorbent, thereby obtaining an effluent steam of feedstock which contains less than about 0.5 parts per million by volume of carbon monoxide and less than about 1 parts per million by volume of propadiene;

effecting, in the presence of an essentially dihydrogen-free atmosphere within the bed, selective adsorption and/or complexing of the contained impurities with the adsorbent, until

levels of the impurities in the effluent stream increase to a limiting level in a range downward from about 1 parts per million by volume; and

thereafter regenerating the resulting bed of adsorbent in the presence of a reducing gas comprising dihydrogen which reducing gas is free of a substantial amount of carbon monoxide, to effect release of the contained impurities from the adsorbent.

20. The process according to claim 19 wherein the adsorbent comprises at least about 90 weight percent of a gamma alumina having surface area in a range of from about 150 to about 350 square meters per gram as measured by the BET gas adsorption method, the metal dispersed on the support material is palladium, and the absorbent has a palladium content in a range of from about 0.01 to about 10 percent based on the total weight of the adsorbent, and wherein the gaseous mixture, while passing through the bed, is at temperatures in a range of from about negative 5°C to about 65°C.